Color CCTV Camera

WV-CL120

Operating Instructions

(Lens : option)

Panasonic®

Before attempting to connect or operate this product,
please read these instructions completely.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

SA 1965

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

SA 1966

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For U.S.A

Warning:
This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the instruction manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

For CANADA

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

The serial number of this product may be found on the bottom of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. WV-CL120

Serial No. _____

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

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PREFACE

Panasonic's WV-CL120 color cameras introduce a new level of high picture quality and high resolution through the use of a 1/2 inch interline transfer CCD image sensor having 682 horizontal pixels (picture elements), and through the use of digital signal processing IC's. A single coaxial cable connects the camera and specified monitor or camera drive unit, and carries the video and audio output of the camera and supplies the low voltage DC power and synchronizing vertical drive pulse to the camera. This economical system is specially designed for the surveillance and security needs at office, factories, stores, schools, hospitals, public and residential building etc.

FEATURES

- High resolution and high quality picture by use of digital processing IC's and use a 682 horizontal pixels CCD image sensor.
  Horizontal Resolution : 430 lines
  Signal-to-Noise Ratio : 46 dB
  Minimum Scene Illumination : 0.3 footcandle (3 lux) at F1.4
- A single coaxial cable connects the camera and specified monitor or camera drive unit.
  Four signals ; audio, video, DC power and vertical drive pulses are carried by a single coaxial cable.
- Optional C-mount lens can be used together with optional Lens Mount Converter (C-mount adaptor) WV-AD20.
- Bulti-in protection circuit in case of misconnection.
- Ability to shoot indoor scenes with fixed iris lens by use of Electronic Light Control (ELC) function.
- Back light compensation for use against unusual lighting conditions.

PRECAUTIONS

- **Do not attempt to disassemble the camera.**
  To prevent electric shock, do not remove screws or cover. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.

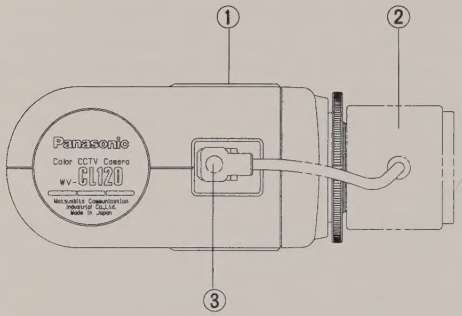
- **Handle the camera with care.**
  Do not abuse the camera. Avoid striking or shaking it. The camera could be damaged by improper handling or storage.

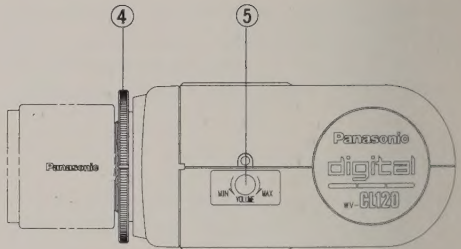
- **Do not expose the camera to rain or moisture, or try to operate it in wet areas.**
  Do take immediate action if ever the camera do become wet. Turn power off and refer servicing to qualified service personnel. Moisture can damage the camera and also create the danger of electric shock.

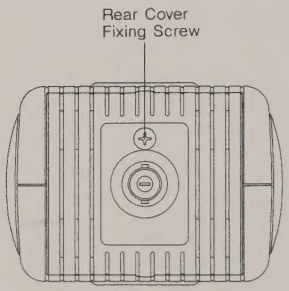
- **Never face the camera toward the sun.**
  Whether the camera is in use or not, never face it toward the sun. Do use caution when operating the camera in the vicinity of spot lights or other bright lights and light reflecting objects.

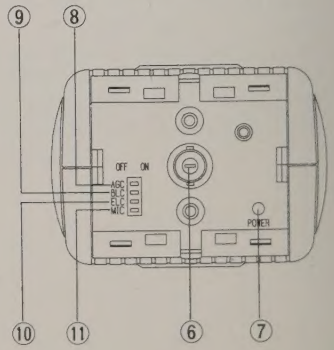
- **Do not operate the camera beyond its temperature, humidity or power source ratings.**
  Do not use the camera in an extreme environment where high temperature or high humidity exist. Use the camera under conditions where temperatures are within 14°F - 122°F (−10°C - +50°C), and humidity is below 90%.

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS









(1) Camera mounting Screw Hole

These threaded holes (1/4" - 20) are located on the top and bottom cover and are used to mount the camera onto a mounting bracket or tripod.

(2) Lens (Option)

See page 9, 10 and 11 for details on lens selection.
Standard C-mount lens can be used with the camera by use of optional lens mount converter (C-mount adaptor) WV-AD20.

(3) Auto Iris Lens Connector

This 4-pin connector supplies the power and DC control signal to the auto iris lens.

(4) Flange-back Adjusting Ring

This ring is used to adjust the back focal length or picture focus by rotating this ring.

(5) Volume Control (VOLUME MIN/MAX)

The volume control is preset in the MAX position at the factory. Adjust this control to prevent the howling.

(6) Video Output Connector

This connector is used to connect a coaxial cable to the CAMERA INPUT of specified monitor or camera drive unit, and accept DC power and vertical drive pulse, and supplies audio and video output of the camera.

(7) Power Indicator

(8) AGC ON/OFF Switch (AGC ON/OFF)

This switch is used to select the gain of the video amplifier as follows :

ON :

The lens iris is fully opened at low light shooting, a clear picture is obtained by automatic increase of the gain.

OFF :

A natural and low-noise picture is obtained under a low light condition.

(9) Back Light Compensation ON/OFF Switch (BLC ON/OFF)

When back light affects the picture, set this switch to ON position for a clear picture. See page 7 for more details.

(10) Electronic Light Control ON/OFF Switch (ELC ON/OFF)

See page 6 for more details.

OFF :

Choose this position used with auto iris lens.

ON :

Choose this position used with manual or fixed iris lens.

(11) Microphone ON/OFF Switch (MIC ON/OFF)

Select this switch in need of on or off.

NEW FUNCTIONS

1. ELC (Electronic Light Control)

In this mode a continuously variable electronic shutter is employed to automatically control exposure times in the CCD Image Sensor, according to the incoming light level. With this mode selected, fixed or manual iris lens can be used instead of an ALC type lens.

Caution :

1. Under bright conditions such as outdoors, use an ALC type lens as the ELC control range is not wide enough under these conditions.
2. Under certain unique lighting conditions, the following may appear :

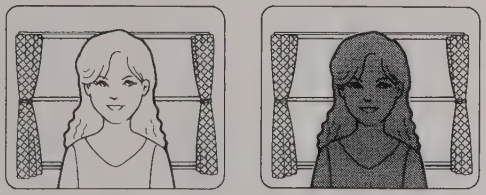
- Strong smear and/or blooming on high light objects such as spot lights or windows.
- Noticeable flicker in the picture and/or the color rendition variations.
- Periodic variance of white balance

Should these phenomena occur, use an ALC lens.

3. When using in the ELC mode with a fixed iris lens, the depth of field of the image may be less than that obtained by using an ALC lens. Depth of field varies inversely with the iris opening.

Thus, using this camera in the ELC mode with the fixed iris lens fully opened will result in less depth of field than if an ALC lens was used. (And distant objects in the picture might not be in focus.)

2. BLC (Back Light Compensation)



ON OFF

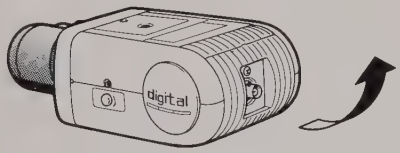
When strong, unwanted background lighting interferes with the clarity of important scene objects, turn this switch to the "ON" position.

Cautions :

1. Setting this switch to the "BLC OFF" position is recommended in the use with the pan/tilt head or in the object having the rapid change illumination, since the speed of lens iris becomes slow in the "BLC ON" position.
2. If the desired objects are not in the center of the picture, back light compensation may not work effectively.

CAMERA SETUP

Remove the rear cover fixing screw and pull the rear cover out as shown below.
To improve performance, select function switches located on the back.



CONNECTIONS

Caution :

Keep the Power Switch of Specified monitor, Camera Extension Unit and Camera Drive Unit in OFF position during connections. If the power of these units are ON during connections, the camera does not function due to protect circuit in case of misconnection.

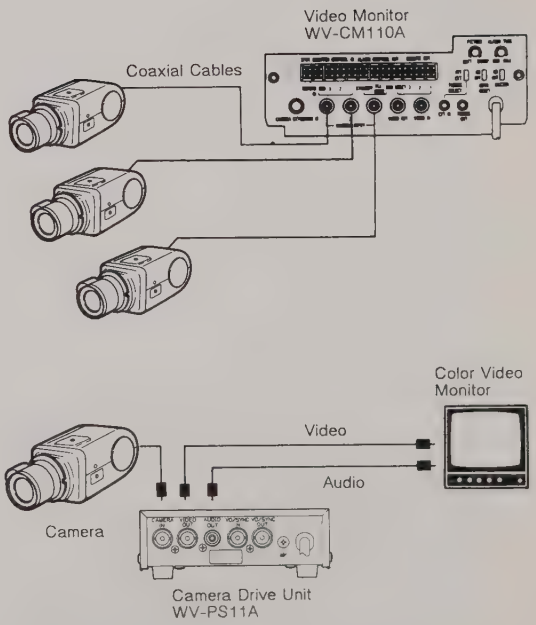
• Basic System

Connect the single coaxial cables between the Camera and Camera Input Terminal of Specified monitor or Camera Drive Unit. The approx. maximum cable length is as :

Coaxial Cable Type	Maximum Cable Length	DC R/1000 ft. of Inner Conductor
RG-59/U	660 ft (200 m)	Less than 30 ohms
RG-6/U	1,650 ft (500 m)	Less than 12 ohms

The maximum DC resistance between the camera and these unit is 20 ohms.

• Connection Diagram



LENSES

1. Selection of Lens

It is recommended to use the following lenses.

<Auto Iris Lenses>

Models / Specifications		WV-LA2.8 (Wide Angle)	WV-LA4R5A (Wide Angle)	WV-LA6A (Wide Angle)	WV-LA12A (Standard)	WV-LA18 (Telephoto)	WV-LA36 (Telephoto)	WV-LZ81/6A (Motorized Zoom)	WV-LZ81/10 (Motorized Zoom)
Image Size		1/2" (6.4 (H) x 4.8 (V) mm)							
Focal Length		2.8 mm	4.5 mm	6 mm	12 mm	18 mm	36 mm	8.5 – 51 mm (6X)	8 – 80 mm (10X)
Maximum Aperture Ratio		1 : 1.4	1 : 1.4	1 : 1.4	1 : 1.4	1 : 1.4	1 : 1.8	1 : 1.2 (Wide) 1 : 1.3 (Tele)	1 : 1.4 (Wide) 1 : 1.7 (Tele)
Angular Field of View	H	107.0°	72.6°	56.7°	29.7°	20.4°	10.2°	41.9° (Wide) 7.2° (Tele)	44.6° (Wide) 4.6° (Tele)
	V	88.0°	56.7°	43.5°	22.2°	15.2°	7.7°	31.3° (Wide) 5.5° (Tele)	33.5° (Wide) 3.5° (Tele)
Focusing Range		Adjusted by camera				0.89ft - ∞ 0.27m - ∞	3.3ft - ∞ 1m - ∞	3.3ft - ∞ 1m - ∞	3.6ft - ∞ 1.1m - ∞
Mount		Special C-mount (CS-mount, 1" - 32UN)							
Filter Size		None	φ37.5 mm P = 0.5	φ37.5 mm P = 0.5	φ37.5 mm P = 0.5	φ37.5 mm P = 0.5	φ37.5 mm P = 0.5	φ49 mm P = 0.75	φ55 mm P = 0.75
Dimensions		φ1-11/16" ×1-5/16" φ43× 34mm	φ1-11/16" ×1-5/8" φ43× 41.5mm	φ1-11/16" ×1-5/8" φ43× 41.5mm	φ1-11/16" ×1-5/8" φ43× 41.5mm	φ1-11/16" ×1-5/8" φ43× 41mm	φ1-11/16" ×1-5/8" φ43× 41mm	3 3/8"(W)×2-7/16"(H) ×3-7/8"(D) 86(W)×62(H) ×99(D) mm	3 3/16"(W)×2-5/8"(H) ×4-1/2"(D) 81(W)×66(H) ×114(D) mm
Weights		0.14 lbs. 65g	0.11 lbs. 50g	0.10 lbs. 45g	0.09 lbs. 40g	0.15 lbs. 70g	0.18 lbs. 80g	0.93 lbs. 420g	0.99 lbs 450g

- Dimensions and weights indicated are approximate.
- Specifications are subject to change without notice.

<Auto Iris Lenses>

Models / Specifications		WV-LA4510 (Wide Angle)	WV-LA608 (Wide Angle)	WV-LA1208 (Standard)	WV-LZ83/6 (Motorized Zoom)
Image Size		1/2" (6.4 (H) × 4.8 (V) mm)			
Focal Lenght		4.5 mm	6 mm	12 mm	8.5 - 51 mm (6X)
Maximum Aperture		1 : 1.0	1 : 0.75	1 : 0.8	1 : 0.8 (Wide) 1 : 1.0 (Tele)
Angular Field of View	H	73.2°	57.5°	31.7°	41.6° (Wide) 7.2° (Tele)
	V	56.9°	43.9°	23.6°	31.3° (Wide) 5.4° (Tele)
Focusing Range		Adjusted by Camera			4.0ft - ∞ (1.2m - ∞)
Mount		Special C-mount (CS-mount, 1"-32UN)			
Filter Size		None	ϕ46 mm, P = 0.75	ϕ46 mm, P = 0.75	ϕ67 mm, P = 0.75
Dimensions		ϕ1-11/16" × 1-11/16" ϕ43 × 43 mm	ϕ2-1/16" × 2-3/16" ϕ52 × 55 mm	ϕ2-5/8" × 2-7/8" ϕ66 × 72.5 mm	3-1/2"(W)×3"(H)×4-5/8"(D) 90(W)×77(H)×119(D) mm
Weights		0.19 lbs. (85g)	0.34 lbs. (155g)	0.56 lbs (255g)	1.63 lbs. (740g)

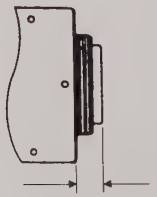
- Dimensions and weights indicated are approximate.
- Specifications are subject to change without notice.

<Manual and Fixed Lenses>

Specifications \ Models		WV-LM4R5A (Wide Angle)	WV-LF6 (Wide Angle)	WV-LF12 (Standard)
Image Size		1/2" (6.4 (H) × 4.8 (V) mm)		
Focal Length		4.5 mm	6 mm	12 mm
Maximum Aperture Ratio		1 : 1.4	1 : 1.4	1: 1.4
Angular Field of View	H	72.6°	56.7°	29.8°
	V	56.7°	43.5°	22.3°
Iris		Manual	Fixed	Fixed
Focusing Range		Adjusted by Camera		
Mount		Special C-mount (CS-mount, 1" - 32UN)		
Optional Filter Size		ϕ37.5 mm, P = 0.5	ϕ34 mm, P = 0.5	ϕ34 mm, P = 0.5
Dimensions		ϕ1-3/4" × 1-5/8" ϕ44 × 41 mm	ϕ1-1/2" × 1-5/8" ϕ38 × 41 mm	ϕ1-1/2" × 1-5/8" ϕ38 × 41 mm
Weights		0.20 lbs. (93g)	0.08 lbs. (38g)	0.07 lbs. (33g)

- Dimensions and weights indicated are approximate.
- Specifications are subject to change without notice.

When you use the lens other than those listed on page 9, 10 and 11, lens mount should be C-mount or special C-mount (CS-mount, 1" - 32 UN) and lens weight should be less than 0.66 lbs. (300g). If not, both the lens and camera should be secured. The protrusion of the rear of the lens should be as shown below.



C-mount : Less than 5/16" (Less than 8.6 mm)
CS-mount : Less than 1/8" (Less than 3.6 mm)

Caution :

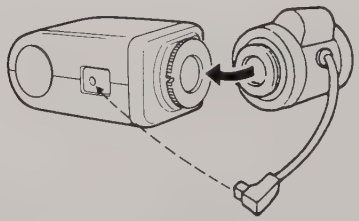
To use the C-mount lens, the Lens Mount Converter (C-mount adaptor) WV-AD20 should be used with the camera.

2. Mounting the Lens

Caution :

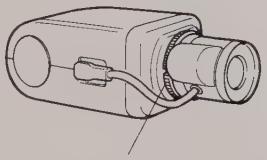
Always set the Flange-back Adjusting Ring to fully clockwise by loosing the screws on the ring before mounting the lens otherwise the inner glass and CCD image sensor could be damaged by the lens.

(1) Mount the lens by turning it clockwise onto the lens mount of the camera.
(2) Connect the lens cable to the Auto Iris Lens Connector on the camera when the Auto Iris Lens is used.



FLANGE-BACK OR FOCUS ADJUSTMENT

1. Loosen the screws on the Flange-back Adjusting Ring.



2. Turn the Flange-back Adjusting Ring to the desired position.

   Caution :

   Do not turn this ring counterclockwise too much as this could damage the inner glass and CCD image sensor.

3. Tighten the screws on the Flange-back Adjusting Ring tenderly (less than 0.5 kg.cm of torque).

INSTALLATION OF CAMERA

The mounting bracket can be fixed either on top or the bottom cover of the camera.

• **Installation on the wall**

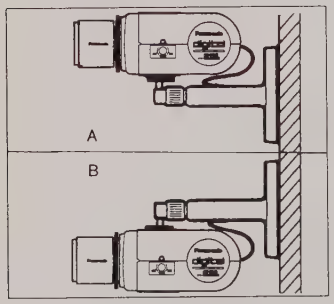


Fig. A, B

• **Installation on the ceiling**

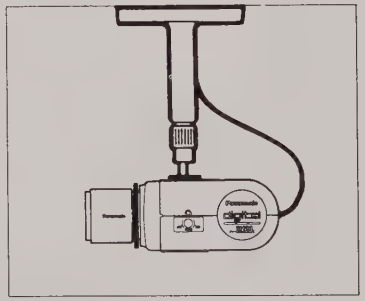


Fig. C

• **Installation on the shelf or stand**

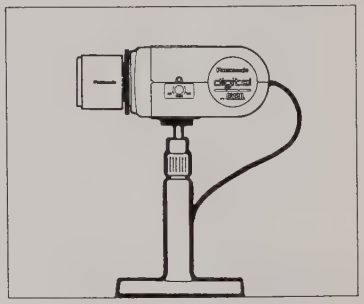


Fig. D

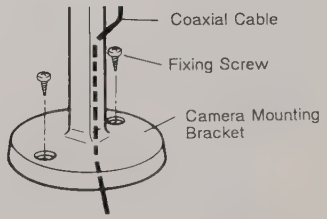
INSTALLING PROCEDURE

The explanation is for the Fig. A, however the same is applied for the Figs. B,C and D.

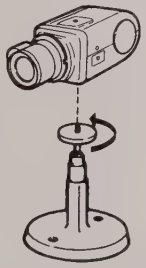
1. Install the camera mounting bracket to the wall with 2 screws.

   Note :

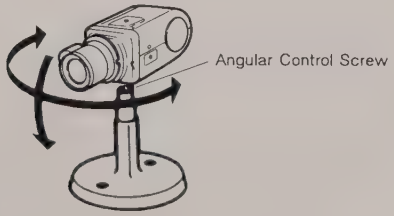
   Coaxial cable can be passed through the center hole of the camera mounting bracket.



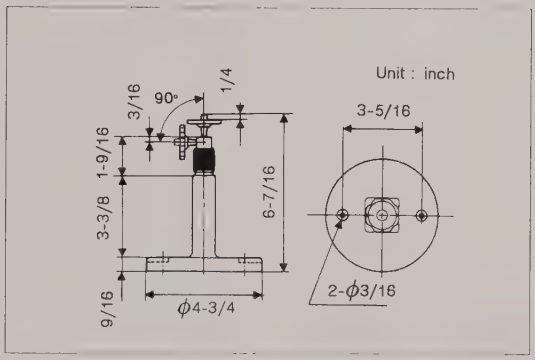
2. Insert the camera fixing screw of the camera mounting bracket into the camera mounting hole and tighten the screw firmly.



3. Connect the camera and monitor with the coaxial cable and turn on the power switch of the monitor.
4. While viewing the monitor picture, loosen the angular control screw slightly. Adjust the camera's angle to the desired position, and then tighten the screw firmly.



DIMENSION OF MOUNTING BRACKET

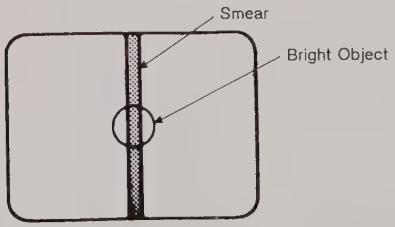


Cautions on installation

Use wood screws with the camera mounting bracket that are suitable for Installation into a wood base of appropriate dimensions and strength. For the installation into a material other than wood, refer servicing to qualified service personnel.

PREVENTION OF BLOOMING AND SMEAR

When the camera is faced toward spot lights or other bright lights and light reflecting objects, smear or blooming may appear. Therefore, the camera should be operated carefully in the vicinity of extremely bright objects to avoid smear or blooming.



SPECIFICATIONS

Pick-up Device :	682 (H) × 492 (V) pixels, Interline Transfer CCD
Scanning Area :	6.6 (H) × 4.8 (V) mm (Equivalent to scanning area of 1/2" pick-up tube)
Synchronization :	Multiplexed vertical drive (VD2) by use of specified camera drive unit.
Scanning System :	2 : 1 interlace
Scanning :	525 Lines/60 fields/30 frames
Horizontal :	15.734 kHz
Vertical :	59.94 Hz
Horizontal Resolution :	430 lines
Video Output :	1.0 Vp-p composite, 75 ohms
Signal-to-Noise Ratio :	46 dB
Automatic Light Compensation :	ALC : 1 : 12,000 with F1.4 ALC lens, AGC ON
Electronic Light Control :	Equivalent to continuous variable shutter speed between 1/60 sec. and 1/15,700 sec.
Minimum Scene Illumination :	0.3 footcandle (3 lux) at F1.4, AGC ON
Recommended Scene Illumination :	14 footcandle (140 lux) at F1.4
Automatic Gain Control :	Selectable ON (+14 dB) or OFF
Lens Mount :	Special C-mount (CS-mount)
Maximum Cable Length :	660 ft (200 m) with RG-59/U (3C-2V) or 1,650 ft (500 m) with RG6/U (5C-2V)
Power Supply :	To be supplied from the specified monitor, camera extension unit or camera drive unit.
Ambient Operating Temperature :	14°F - 122°F (−10°C - +50°C)
Ambient Operating Humidity :	Less than 90%
Dimensions (without lens) :	2-7/8" (W) × 2-5/16" (H) × 4-5/8" (D) 73 (W) × 58 (H) × 118 (D) mm
Weight (without lens) :	0.84 lbs. (0.38 kg)

Weight and dimensions indicated are approximate.
Specifications are subject to change without notice.

STANDARD ACCESSORIES

Body Cap	1 pc.
Camera Mounting Bracket	1 pc.

OPTIONAL ACCESSORIES

Camera Drive Unit	WV-PS10A, WV-PS104
Camera Drive Unit (with audio)	WV-PS11A, WV-PS104B
Color Video Monitor	WV-CM110A
Camera Extension Unit :	WV-AD110A
Auto Panning Head	WV-35A
Panning Remote Control Unit	WV-32
Dust Proof Housing	WV-40
Lens	WV-LA2.8, WV-LA4R5A, WV-LA4510, WV-LA6A, WV-LA608, WV-LA12A WV-LA1208, WV-LA18, WV-LA36, WV-LZ81/6A, WV-LZ81/10 WV-LZ83/6, WV-LM4R5A, WV-LF6, WV-LF12
Lens Mount Converter (C-mount Adaptor)	WV-AD20

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